CLAIMS

1. A mechanical seal having an axially floating seal face in sliding contact with an axially stationary seal face, and means for biasing said floating seal face towards said stationary seal face, said axially floating seal face and said biasing means being rotationally fixed relative to each other and said axially stationary seal face being free to rotate relative to said axially floating seal face.

2. A mechanical seal according to claim 1 wherein said biasing means is in the form of one or more magnets.

3. A mechanical seal according to claim 2 wherein the or each magnet is non-rotating.

4. A mechanical seal according to claim 3 wherein the or each magnet is mounted in a non-rotating housing.

5. A mechanical seal according to any of claims 2 to 4 wherein said magnet is mounted radially outwards of said seal faces.

6. A mechanical seal according to any of claims 2 to 5 wherein the seal includes a magnetically insulating member located between said magnet and said axially stationary surface.

7. A mechanical seal according to any of claims 2 to 6 wherein the seal is provided with two or more magnets circumferentially separated by a spacing element.

8. A mechanical seal according to claim 7 wherein the spacing element is provided by a radially extending castellation from a support member positioned radially inwardly of said magnets.

9. A mechanical seal according to any of claims 2 to 8 wherein said seal comprises first and second axially floating seal faces and a magnet, one end of which attracts said first axially floating seal face and the other end of which attracts said second axially floating seal face.

10. A mechanical seal according to any of claims 2 to 8 wherein said seal comprises at least two counter-opposed magnetic members, said first magnetic member attracting a first axially floating seal face and second magnetic member attracting a second axially floating seal face.

11. A mechanical seal according to any of claims 2 to 10 wherein said seal includes an outer housing which contains at least one magnet secured therein.

12. A mechanical seal according to claim 11 wherein the magnet is axially flush with a shoulder on the outer housing.

13. A mechanical seal according to claim 1 wherein said biasing means is a mechanical biasing means.

14. A mechanical seal according to claim 13 wherein said biasing means comprises one or more springs.

15. A mechanical seal according to claim 14 wherein said springs are compression springs.

16. A mechanical seal according to any of the preceding claims wherein the seal includes a housing and said housing is provided with a radially extending hole connecting the outermost and innermost surfaces of the housing.

17. A mechanical seal according to any of the preceding claims wherein at least one of said seal faces is segmented.

18. A mechanical seal according to any of the preceding claims wherein the seal includes two substantially identical pairs of contacting seal faces.

19. A mechanical seal according to any of the preceding claims wherein said seal has at least one symmetrical seal face when viewed at approximately 90° to the shaft on which the mechanical seal may be mounted.

20. A mechanical seal according to any of the preceding claims wherein said seal includes lubrication means for feeding lubricant to said contacting seal faces.

21. A mechanical seal according to any of the preceding claims wherein said seal is a double mechanical seal of a size small enough to fit in the space having a radial cross-section up to 1.5mm.

22. A mechanical seal according to any of the preceding claims wherein said seal is a double mechanical seal small enough to fit in a space having an axial dimension up to 6mm.

23. A mechanical seal according to any of the preceding claims wherein said seal includes a housing having in its outer radial surface a radial indentation providing pressure relief within the seal.

24. A mechanical seal according to claim 14 wherein the radial indentation is in the form of a spiral.

25. A mechanical seal according to any of the preceding claims wherein said seal includes an outer housing which axially and radially engages a self-aligning housing.

26. A mechanical seal according to claim 25 wherein said engagement of the two housings is between two spherically contoured mating surfaces.

27. A mechanical seal according to claim 25 wherein said engagement of the two housings is of one spherically contoured surface mating with a tapered surface.

28. A mechanical seal according to claim 25 wherein said engagement of the two housings is provided by an elastomer joint which separates axially and radially the two housings.

29. A mechanical seal according to any of the preceding claims wherein said seal includes a spring plate containing compression springs and having at least one blind slot which is radially displaced to the axially floating seal face, said seal face containing at least one radially extending castellation which protrudes into the blind slot and is axially connected.

30. A mechanical seal according to any of the preceding claims wherein said seal includes an outer housing which is connected to at least one bellows-like member, said bellows-like member being connected to an axially floating seal face and providing axial biasing to maintain the floating face in contact with the corresponding seal face which is free to rotate relative to the axially floating seal face.

31. A mechanical seal according to any of the preceding claims wherein the seal includes an outer housing which is connected to two bellows-like members, said members being connected to two separate axially floating seal faces positioned either side of an axially stationary seal face which is free to rotate relative to said axially floating seal face.

32. A mechanical seal according to any of the preceding claims wherein said seal includes an earthing means which conductively connects the outer stationary housing to the rotating assembly.

33. A mechanical seal according to any of the preceding claims and including one or more elastomers or sealing members made from a conductive material.

34. A mechanical seal according to any of the preceding claims wherein said seal is mounted in a slider housing and is axially free to move with respect to the slider housing which is secured to the bearing housing.

35. A mechanical seal according to any of the preceding claims wherein the seal is axially split on its centre line to provide two seal halves which are secured together.

36. A mechanical seal according to claim 35 wherein said seal halves are mechanically secured together.

37. A bearing protector in the form of a mechanical seal as claimed in any of the preceding claims.